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ABSTRACT

This paper explores some ways research can be used to create a more integrated theoretical understanding of the interaction between individual cognition and social/cultural context as the motive force in literate acts. Drawing on data from recent research on writing, the paper proposes three principles that inform a more complicated interaction and suggests that both cognition and context may in a sense construct one another. The principles the paper proposes are: (1) that cultural and social context can provide direct cues to cognition; (2) that context is always mediated by the cognition of the individual writer; and (3) that the bounded purposes that emerge from this process are highly constrained but at the same time meaningful, creative constructs. Addressing the issue of developing an interactive theory, the paper investigates the need for a broader vision of research as a tool for building contextualized and integrated theories of writing, and focuses on a particular route to theory building, suggesting reasons why observation-based research is the preferred route. Fifty-three references are attached. (KEH)

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Center for the Study of Writing

Occasional Paper No. 11

COGNITION, CONTEXT, AND THEORY BUILDING

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May, 1989

University of California, Berkeley
Carnegie Mellon University

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COGNITION, CONTEXT, AND THEORY BUILDING

By

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English studies are caught up in a debate over whether we should see individual cognition or social and cultural context as the motive force in literate acts. This conflict between cognition and context (Bartholomae, Berlin, Bizzell, Knoblauch) has special force in rhetoric and composition because it touches some deeply-rooted assumptions and practices. Can we, for instance, reconcile a commitment to nurturing a personal voice, individual purpose, or an inner, self-directed process of meaning making, with rhetoric's traditional assumption that both inquiry and purpose are a response to rhetorical situations, or with the more recent assertions that inquiry in writing must start with social, cultural, or political awareness? These values and assertions run deep in the discipline. One response to these differences is to build theoretical positions that try to polarize (or moralize) cognitive and contextual perspectives. We know that critiques based on dichotomies can fan lively academic debates. It can also lead, Mike Rose has argued, to reductive, simplified theories that "narrow the mind and page" of student writers. In the end, this attempt to dichotomize may leave us with an impoverished account of the writing process as people experience it and a reductive vision of what we might teach.

We need, I believe, a far more integrated theoretical vision which can explain how context cues cognition, which in its turn mediates and interprets the particular world that context provides. This paper is about ways we might build such a vision by using what we have learned from arguments which problematize or reify this conflict but by also taking a step a step beyond them. Currently, our competing images of the composing process reflect a cognitive/contextual polarization that seems to shrink understanding and threatens to break our vision of writing up into floating islands of theory. What we don't know is how cognition and context do in fact interact, in specific but significant situations. We have little precise understanding of how these "different processes" feed on one another. My intention here is not to propose a specific theory, but to explore some ways we might use research to create a well-supported, theoretical understanding of this interaction.

Constructing an interactive theory would make some significant demands upon us. First we would have to go beyond current partial positions. Early work in cognition, like most other work at the time, focused on the individual (Emig, Flower and Hayes). The Hayes/Flower cognitive process model is a case in point. Although this model suggests key *places where* social and contextual knowledge operate within a cognitive framework, that early research did little more than specify that the "task environment" was an important element in the process; it failed to account for *how* the situation in which the writer operates might shape composing, and it had little to say about the specific conventions, schemas, or commonplaces that might inform the writer's "long term memory." Other elements of the cognitive theory presented in 1981, such as the role of recursion, the shifting shape of writing plans, and the way a writer's own goals and vision of the task shape composing, may stand as strong claims, but claims focused nonetheless on describing basic processes and the individual writer. Early work focused on the social context, wanting to see people as a social/political aggregate or as members

of a discourse community, is likewise limited by a failure to account for the experience of individual students or writers within a group and to accommodate a vision of human agency, original contributions, and personal or intellectual development (Bizzell, "College Composition;" Bruffee). An interactive theory can build on what we already know and find valuable, but must go beyond.

To do so will demand both an openness to discovery and rigor. If we would understand how cognition and context interact, we can not remain satisfied with speculative theories based only on abstract social or political imperatives. Even as we champion our values, we must distinguish prescription and assertion from description and evidence. Nor can we rely on contributions that offer us only a deconstruction or critique without offering in turn a substantive--and in some way substantiated--alternative. We need what ethnographers describe as "grounded theory"(Spradley)--a vision that is grounded in specific knowledge about real people writing in significant personal, social, or political situations. This grounding can come from many sources: from the comparative analysis of student texts (Bartholomae, Shaughnessy) or of talk at home and in school (Heath), from detailed discourse studies of the reading process, plans and drafts of writers within specific communities (Bazerman, Myers), or from historical reconstructions of early rhetors in action (Enos). This grounding may emerge from the thick descriptions of field notes, plans, drafts and process logs (Herrington, Nelson and Hayes), or from tracking how students represent writing tasks to themselves in their protocols, texts and self-reflections (Flower, "Task"). It may come from the long-term observation of an educational experiment (Freire). Although these examples of observation operate out of different paradigms, with different immediate goals and values, they all offer the basis for learning something we didn't already "know" and for grounding and testing a developing theory within its own framework.

The interactive vision I am proposing would do one more thing. It would help us teach. Though we embrace multiple conceptual frameworks, we share the goal of helping writers understand themselves as constructors of meaning within a social and cultural context-- a context that can both nurture and consume an individual writer. Educators do not work with abstractions; they work with students. As a teacher, I need an interactive vision of the writing process that can address the hurdles student writers often face, that can account for the cognitive and social sources of both success and failure, and that can talk about the experience of writing by being adequately fine-grained and situated in that experience. I want a framework that acknowledges the pressure and the potential the social context can provide, at the same time it explains how writers negotiate that context, create their own goals, and develop a sense of themselves as problem-solvers, speakers, or Subjects who create meaning and affect other people through their writing. Although journal articles have the luxury of assuming a cognitive/contextual dichotomy, teachers can not afford to present only half the picture. We need a grounded vision that can place cognition in its context, while celebrating the power of cognition to change that context, in a theory so richly specified that it can describe how individual writers develop those powers for themselves.

Peer response is a case in point where critical examination of how cognition and context affect one another seems called for. In theory, using peer response can be seen as invoking either a cognitive or a social experience. However, the "writing process" envisioned in each case is described quite differently. When one's image of writing is derived from social theory that foregrounds the role of "context," composing can be seen as a move within in a discourse community, as a contribution to a larger conversation, as an interpersonal gesture, or as an act

(acknowledged or not) of collaboration. If one emphasizes a cultural over a social context, the process of writing might be described as the enactment of the writer's assumptions and prior knowledge, or as the expression of (or resistance to) the political, economic, and historical forces that could be said to write the writer. As a classroom activity, peer response seems a "natural" extension of this social/cultural vision of writing. On the other hand, when one's image of writing foregrounds the experience and cognition of the individual writer, composing is at once a goal-directed rhetorical act and a cognitive and personal act of constructing meaning. Tracking the writer's tumbling stream of consciousness, we see a recursive thinking process guided (with or without conscious awareness) by the goals and knowledge the writer invokes and by the rhetorical situation--as the writer interprets it. In learning to write, writers not only increase their knowledge of discourse conventions and specific literate practices , they build a repertory of thinking strategies, and--at times-- achieve a reflective awareness of their own constructive and interpretive processes.

Peer response places writing in a teacher-designed community of response. If we see writing as a social, context-driven event, this instructional move makes sense because it seems to enact our image of writing as a social, cultural process, happening within a classroom community. But what is happening to the cognition of individual students in this instructional context? Can we, for instance, predict that certain kinds of thinking will occur as a result of our social engineering? Many of the arguments for using peer response presume that the group will affect the cognition of the individual student: groups intervene within and can affect the writing process itself; they prompt students to work collectively to discover ideas; they create a live audience to which students can respond, which, it is argued, leads the individual to an internalized sense of how readers respond; and finally, they shift the emphasis in a classroom from product to process and from teacherly evaluation to writers' goals and readers' response (Freedman). But what actually happens in the minds of students? There is little question that at times peer response--as a teacher-generated social activity--*can* achieve these particular cognitive goals. However, Freedman's close analysis of response groups at work in two exemplary middle school classrooms reveals a mismatch between an instructional process or activity in the classroom and the cognitive process it was presumed to stimulate . Although both classes used dittoed response sheets specifically designed to prompt evaluation, students went to great lengths to avoid evaluating each other and to maintain smooth social relations with their peers. One response prompt asked: "What words or sentences seem out of place?" Students refused to answer in various ways:

> Mike: I'm not going to say anything's out of place. Okay?
> Donald: Yeah. Everything's great. Perfect !
> [both laugh] (15)

Although the sheets kept students on task and did prompt problem solving, much of their thinking, it seems, was directed to solving the puzzle of how to fill out the teachers' sheets while avoiding an evaluative response. When students in one class were allowed to function in a more natural manner without sheets, the mismatch between the cognitive process promised in the literature and the very lively social, classroom process that actually went on appeared even greater. Students spent an average of only 52% of their time on the task, with the rest of their attention devoted to "telling one another jokes or talking about weekend plans, friends, or hair-coloring" (22). Freedman's study is not a critique of peer response, but it exemplifies how these different processes--the instructional one we design, the cognitive one we presume it will support, and the social one that goes

on anyway--can be strikingly out of synch. The critical, self-monitoring cognitive process we want students to develop may be in unstated conflict with far more pressing, interpersonal needs for social affiliation, where acts of evaluation and criticism threaten solidarity.

As this small example suggests, it seems naive to assume that the cognitive processes we desire will naturally follow from the a social situations we engineer. If we ignore the dialectic between cognition and context or if we try to enact one image of a "good" writing process but ignore the other, we may be building instructional delusions. We can't afford to speculate about students' thinking from the armchair of social theory. Nor can we place mind in a bell jar and divorce the writing process from the social and emotional tide of talk on which it flows. The problem for peer response is that even if we acknowledge the significance of this dialectic, there are few studies that have, like Freedman's, carefully tracked the path it actually takes.

Elements of A More Interactive Theory

In asking us to examine how cognition and context interact, I do not want to suggest that we need a single image of the writing process or a single "integrated theory"--writing is too complex a phenomenon, and history tells us that single visions rarely satisfy many long. What I would argue for is, first, the need for more balanced, multi-perspective descriptions and more rigorously grounded theoretical explanations of various aspects of the writing process: of the process of meaning making, of constructing knowledge, of working collaboratively, of planning and revising, of reading-to-write, of entering academic discourse and so on (Cf. Rose, "Complexity"). We already hold implicit theories about these acts. Even if we disavow the practice of theorizing, our images of the process and our priorities in teaching constitute a tacit theory. However, the wedding of composition with rhetoric, psychology, and now reading has called on us to theorize our understanding of composing in more reflective and testable ways. The sudden growth of research, scholarship, and new ideas, as well as the sometimes precipitous rush to polemical stands based on various moral, teacherly, or political imperatives, makes this a good time to reach for more analytical and balanced visions, for a greater sense of the conditional nature of our various perspectives. It is time for the systematic and self-questioning stance that goes with theoretical explanations--whether we are explaining a historical event, an experimental or observational study, or an approach to teaching.

Secondly, these attempts to build integrated, theory-conscious accounts of writing need, I believe, to address the apparent dichotomy of cognition and context in a direct way and in a spirit of open inquiry. It would be simple to frame this question in terms of a conflict--as much of the current discussion tends to. To ask, for instance, which element dominates or determines writing; what constitutes the balance of power; which is most important? But defining that relation as conflict might lead us to a simplistic conceptualization if these forces are, in fact, strongly interactive.

Let me propose three principles that inform this more complicated interaction and suggest that both cognition and context may in a sense *construct* one another. One principle is that cultural and social context can provide direct *cues* to cognition. The second is that that context is also and always *mediated* by the cognition of the individual writer. And the third is that the bounded purposes that emerge from this process are highly constrained but at the same time meaningful, creative constructs.

Context Cues Cognition. One does need at least one writer to produce writing. But as we shed the romantic mythology of the isolated creator, we see the ways other people, the past, and the social present contribute to the production of a text, through cultural norms, available language, intertextuality, and through the more directly social acts of assignment giving, collaboration, and so on. The context in many ways determines, directs or prompts the kind of thinking the individual writer will do--even if the writer's response to that context is resistance. It operates as a sign and a cue to cognitive action.

Rhetoric has traditionally affirmed this principle by treating the rhetor/writer as a social actor within a public form. The art of persuasion is described as creating identity or a shared image with others, and the available "means" of persuasion rely on using those patterns and conventions of thought the audience will find convincing. The rhetor of classical theory literally stands within a public circle of peers, speaking to and within an exigency which has prompted the discourse. Although the rhetor of modern theory sits at a keyboard, invention is still described as a response to stasis and the shared problem that motivates discourse.

When we try to account for the influence of context in cognitive terms, we notice that the language of "problem-solving" itself places the writer in a responsive stance. Cognitive action is often initiated in response to a cue from the environment--in response to an "ill-defined problem" that the "solver" may have to define from limited and ambiguous cues in the world around. Research in cognition tends to concentrate on the response of the individual rather than on the situational cues, for obvious reasons: one can observe a writer's actions with some clarity; however, the cues which stimulated a given action may often need to be inferred or may even remain a mystery (e. g., was the shift in the writer's argument a response to her own text, to possibilities inherent in her own language? Or did a quick glance at the assignment trigger a private association or an intuition about the unstated intentions of the instructor?) We may be unable to trace these multiple signs and causal links in many, even most cases, but we can describe some ways this cuing process works.

Context guides cognition in multiple ways. In its least visible role, context affects us in the form of past experience that supplies a wealth of prior knowledge, assumptions, and expectations, many of which can operate without our conscious awareness. These conceptual frameworks may even passively determine what it is possible to think or see. However--and I think this "however" is a strong rebuttal to linguistic determinism--adults possess an enormous repertoire of conceptual frameworks and, in any given situation, we can not predict which will be activated, which quiescent. In situated cognition is it not what is known, but the knowledge one uses that matters.

Context can also interact with the mind of the writer in a more direct and forceful way as a *cue to action.* Context selectively taps knowledge and triggers specific processes. For good or for ill, these cues to mental action may activate only a portion of what a given writer knows or could do, but they influence three key areas of cognition in writing: goals, criteria and strategies. When context guides the process of setting goals, it can in essence dictate the problem the writer tries to solve, even when that cue is in conflict with other goals and values. For example, many students leave high school seeing school writing as an occasion for recitation or a tool teachers use to evaluate their comprehension of the textbook. When a college assignment asks, instead, for interpretation, critical analysis or

argument, they may continue to see their writing task as knowledge telling, a goal which leads them to suppress their own ideas and to avoid critical engagement with the texts they read--all in good faith that they are doing what is expected in school writing (Ackerman, Stein).

Context also guides action by setting the criteria by which a text or even a one's own thinking process is monitored and evaluated. In Freedman's peer response study, for example, the dittoed assignment sheets and the demands of social maintenance set the standards for students' response to writing. These sheets were so good at doggedly focusing the attention of the group that students rarely interrupted with a personal or readerly response to the content. Finally, context cues action by suggesting appropriate strategies. Teachers, for instance, hope the holy words of college assignments (e.g., "analyze," " interpret") will cue the bundle of intellectual maneuvers every student should have learned . But "transfer" is a perennial problem in education in part because the context of a new class may fail to cue a student to use strategies which are appropriate, but were learned elsewhere in a different context. Because the new situation fails to contain meaningful cues to action (i.e., signs or signals that the student recognizes as such "cues"), the cognition in which he or she could engage is never invoked.

The principle that context cues cognition is important to an interactive theory because it helps explain both the nurturing and oppressive power of context within the mind of the writer and without. It suggests some ways context can operate within a writer's thinking and the problem of transfer these context-specific cues pose for education. It also leads us to ask: Could metaknowledge and awareness of one's own process play a role in expanding the cues students perceive and the options they entertain?

Cognition Mediates Context. Context is a powerful force. However, it does not produce a text through immaculate conception. It is a semiotic source of signs, not a program for action. Context in its many forms is mediated--at all levels of awareness--by the cognition of the individual writer. A case in point: in a study of the reading-to-write process, my colleagues and I tried to track the ways in which a group of 72 first-semester freshmen interpreted an open-ended college writing assignment, in the act of reading and writing (Flower et al.,"Reading"). At one level of analysis, the broad outlines of a shared culture emerged as a dominant force in this situation; one could see how the process of task representation was shaped by the legacy of school and the habits of recitation these successful students quickly invoked. But at another level of analysis, the striking fact was the constructive process of the individual student. The tasks students built for themselves differed from one another in the goals they set, the strategies they invoked, the knowledge they chose to use (which included or rigorously excluded the writer's own ideas), and the different organizing plans they thought appropriate for the assignment (which ranged from simple summaries, to free response, to careful synthesis, to interpretations of the reading for a purpose of the writer's own). These individual differences in task representation, which emerge from this more fine-grained analysis, are very meaningful differences: they affect the likelihood that a student will actually transform information; they dictate the role of the writer's own ideas and affect the usefulness of the text for readers; and in many cases they could determine the grade the paper would receive and the instructor's evaluation of the student. However, as this study showed, students may fail to perform an expected writing and thinking task which they could do because, through their own constructive process of task representation, they gave themselves a different task to do.

This study graphically illustrates how students from similar backgrounds, doing a shared assignment in a common freshman writing class interpreted that situation in different ways in terms of the goals they set for themselves, the criteria they invoked, and the strategies they called upon. The shared context was mediated by individual cognition. However, this mediation did not occur as a single, self-conscious decision. In fact, most students did not appear to be aware that such diversity of interpretation regularly happened, that so many live options existed for them, or that their own interpretive process played such a large role in creating the task they actually did. Nor was this interpretive, mediating process limited to occasional instances of pondering over the terms of the assignment; it went on as a part of the sustained cognitive process of planning, problem-solving, and making trial-and-error stabs at doing the task. It is important to see that, as with any interpretive process, cognition takes action through interaction.

At times, the mediating work of cognition is tacit, immediate, and swift; at others it is explicit, alive to alternatives, and maybe even self-conscious or reflective. When the process of interpretation is tacit--fast and automatic--it may seem as though the cues of the context are simply governing the process. For example, a student "reads" an extended paper comment as simple criticism and a signal to delete the contested idea; a journalist "reads" a situation as a news story. In both cases the response to context was immediate and uncontested, but neither response was merely "natural" or "determined" by the context. Automated processes often reflect the rewards of learning; actions which were once the slow product of effortful concentration by the novice journalist give way to sophisticated cognition that transforms a situation into its own image. The downside of such practiced cognition is that it runs unexamined and remains closed to critical thinking. A student who "reads" the context of assigned school writing as a cue to knowledge-telling and who mediates that context in limited and tacit ways, may never notice the other cues that could prompt her to interpret or adapt her ideas for an original purpose.

At other times the process of mediation is sustained and complex. Writers read a rhetorical situation, mulling over its implications and their goals; they may evaluate their own plans; they may imagine how readers could respond. In this intuitive strategic and interpretive process, we can see the rhetorical context being constructed. Out of the writer's storehouse of frames, scripts and schemas and the plethora of potential cues the situation affords, a rhetorical situation is created by the writer's own inferences and selective attention. I do not want to suggest that writers are necessarily aware of this process or the role of their own mediation, even when they wrestle with, think through, and worry over "what I should do here." As thinking-aloud protocols show, it is easy to be immersed in a tense, absorbing cognitive drama and not spare attention to monitoring that process itself.

Here is an example of a student actively mediating various aspects of the writing situation as she works on a reading-to-write assignment which asked her to use a brief set of readings to write her own statement on the topic of "revision." We see a writer caught up in conflicting cues to action, looking at the draft text and text plan she wants to save, on the one hand, and, on the other, at the assignment demands for an integrated statement. To complicate the situation, she has just realized that her source text is asserting a structure that is at odds with her own focus on the topic of revision. [Underlined words indicate notes and sentences written as the writer was thinking aloud; dots indicate brief pauses.]

And then, the third part will be how poor writers, um, rewrite.
No, how poor writers revise.
Hmm. Right now I'm thinking I don't really like the way this is structured.
It doesn't seem to integrate ideas.
It's hard to write this
because I'm being basically asked to write what I've just read
and I don't want to copy exactly.
So I keep thinking there must be more in the assignment than what I'm seeing.
And I'm looking at the task and reading it again [page turned]
I guess I'll just go ahead and do it this way and see what happens,
because I'm not sure what more I should be doing in this.
Ok Let's see. I'm going to . . . write this part.
Skimming through the paper, I'm picking out what I think are the main points. . .
I know this differs earlier from the goals that I set up previously,
but I'm going to go ahead and do it this way.
OK . . . um, the first paragraph, generally the main ideas of that is that stronger writers do more planning than did the weaker writers.
Hey, that doesn't really fit into my structure though, where I would have the goals of revision written first.
So I'm going to read on further and see if I can find anything that pertains to it.

Although the contextual cues here are relatively local ones, they illustrate the problem of mediating conflicting cues that can come from an assignment, from one's own draft text, and from the implicit expectations set by a course (e.g.,"there must be more" than I'm seeing). We can see some of this writer's interpretive moves (and some of her unquestioned assumptions) as she tries to deal with 1) the conflict between her goals to "not copy" but still to use the source text's "main ideas" and 2) the related dilemma that one of the "main ideas" from the source (on the subject of planning) is at odds with her own structure focused on how writers revise. The writer mediates these conflicting cues to action by first recognizing the conflict itself and locating its sources, and then by choosing a tentative solution. At one point she rises to awareness of this strategic process itself (i.e., "It's hard to write this because...) which becomes the object of her own reflective thought.

A Bounded Purpose Is a Meaningful Rhetorical Act. An interactive theory, I believe, will have to recognize both the mediating power of cognition and the directive cues of context . And in doing so, it must face the troubled issue of intentionality. Are writers "determined" by their situation, do they "control" the meanings they make, or is "originality" only an illusion and "purpose" a fiction of rhetoric texts? Once again, dichotomies and uncontextualized, unconditionalized claims may obscure the issue. Social theorists who attack the illusion of control, who would locate purpose in the unconscious and dismiss the ephemera of cognition, have a special agenda--to understand *why* context and culture controls us as much as it does. Writing researchers and educators may be quite happy to acknowledge such forces, but their agenda is not to explicate or reify them. Rather, it is to ask: *Where*, within this looming landscape of internalized forces we do not control, does human agency and intention insert itself? And when it does, *how* does it do so? From a educator's point of view, it may be better praise a small doughnut than bemoan a large hole.

Purpose in writing is always a bounded purpose. Whether one is constrained by the assumptions of one's culture, the material realities of the publishing industry, the demands of one's job, or the terms of an assignment, purpose takes shape in a context that both demands and entices the writer to walk into the embrace of purposes that are in some sense not her own. And yet, within this ring of constraints, writers make critical choices at two levels. On one, they may choose to make some of these "given" purposes their own (to embrace the goals of a course or assignment as a statement of shared intentions) or to resist "given" purposes or ignore chosen constraints. Though we may be more inclined to attribute purpose and independence to visible resistance, both acts make choices *among* constraints. The construction of purpose also goes on at another level: within these global givens, one must still construct an individual, if bounded, purpose that not only meets but mediates all of one's goals. Forming a rhetorical purpose is a complex and creative act of negotiation. Although the writer we saw above was constrained by the assigned goal to"integrate ideas," she was facing the writers' task of instantiating that goal with an individual rhetorical plan, with ideas, and with sentences on a page. In turning that abstract intention into a specific rhetorical action she is indeed creating a conditioned or *bounded* purpose, but it is the construction of meaning at just this level that often consumes the energy and attention of writers, that can distinguish expert from novice, and that constitutes some of the bold and integrative moves we call original.

When we look closely at how writers construct these bounded purposes we do not see a single statement of purpose, but a web of purpose--a complex network of goals, plans, intentions and ideas (Flower, "Construction of Purpose"). The creation of this web is a richly interactive social and cognitive event; however, the way in which people manage or mediate the constraints upon them may depend on whether they recognize the significance of their own choices within this web. The following comments come from another segment of the Reading-to-Write project in which we talked with students about the differences in task representation we had seen in the initial data. Ron, the student quoted below, did not have much to say about his strategies for writing *per se*--monitoring his own thinking process seemed new to him. On the other hand, he was quite articulate, even savvy about the social strategies and behavior that support his highly intentional effort to mediate and interpret the context of assigned writing. Talking about classes in general he said:

> I try to write it as soon as I can and let them look at it. Even take it right to the teacher, and say, look at this. Am I going in the right direction or not?
>
> [Interviewer:] That's a kind of expensive way to do it, isn't it?
>
> You pick up things. You pick up good things. It's expensive in terms of that paper, but it's not expensive in terms of putting that away for future reference for the rest of the course. Really, its pretty practical if you think about it. Rather than going about it and getting two, three "C"s on a paper.

Ron, it seems, is not talking just about getting help on this paper, but about using audience to figure out the ways to think, goals to set--especially when he must face the problem of using his own knowledge.

> It's not really a conscious process that I go through. You just got to listen. I don't know if it sounds weird or what. But I sit there and I watch them during the lecture, I listen to key words that they use. They register.

Ron then goes on to articulate what is essentially a theory of negotiated meaning:

> And to be honest with you, I think it has a lot to do with my being... I've been out for 10 years, and I came back. And this is more related to real-world experiences. How it goes. I mean, you can go out and you can tell your boss -- "Well, I think we could do it this way." And you have a real good idea. And he just says -- "Get outa here." Meanwhile, if you really think it's a good idea you can twist it around and maintain the gist of the whole thing and maybe get it pushed through. Mutually beneficial: it's gonna help him and help you.

Ron came to college seeing meaning as something you negotiate with your reader. Using your own knowledge, he says in the interview, "that's a risky decision." It is obvious Ron would prefer direct feedback and negotiation on a given text--he would prefer the audience to act-as
an direct cue to immediate action. But when Ron talks about listening, finding old tests and investing time in the first paper, that context is being translated into a unique mental representation of an audience and expectations that will guide his thinking on the next paper.

As a writer, Ron seems most aware of his process in terms of feedback and social maneuvers. At the same time, his own comments raise questions about that less visible interpretive process he describes elsewhere as "filtering." One wants to know what happens when Ron decides to "sit there and watch," when he "listens to key words" and when they "register." How does his interpretive process and his way of mediating that context differ from that of other students who are also "listening" in class, but who hear it differently? What effect does the very fact of Ron's strategic decision to make meaning, to seek cues and actively filter his context have on his writing? To me, these questions call for a new kind of research that could reveal the social and cognitive process by which Ron mediated the situation he found himself in and in doing so translated that context into action.

As an educator one can also feel uneasy about the way this writer depends on feedback for self-direction (a concern also voiced by his teacher in this study). Talking about a history paper Ron told us:

> You get an answer in your mind as to what your interpretation of the task is and what the answer is. But then, you filter that through the realities of your environment and what's going on . . . But that doesn't mean that you have to abandon your original thought on that. It just a matter of practicality really.

Are these assumptions about meaning making, forged over ten years of rising from stock boy to assistant manager of a large store, going to be a sensitive guide to the academic discourse valued in college and to independent thinking? Ron, in his own way, seems to be facing one of the problems of integrating cognition and context. In his context-dominated image of the process there seems to be little room for his own personal authority and options. The social cues he so energetically seeks are treated as if they were unambiguous cues to action. On the other hand,
Ron's own goals and strategies lead him to just "listen" in a radically constructive way--to interpret and transform the context of the freshman class into a plan for action. In many ways, Ron inhabits his own cognitively constructed context of

freshman writing in which he acts with a sense of purpose that is at once assertive, bounded, and problematic. The Reading-to-Write study suggested that we needed a theory and language of interaction to understand Ron. It also illuminated some of the difficulties of conducting such research.

Seeing Interaction in Action

If we agree that a theory of interaction is a worthwhile goal, we have not given ourselves an easy task. *Inter*action or situated cognition (Brown, Collins, Duguid) is a conditionalized sort of action, operating in response to specific situations, including a context within the writer's own mind which changes as that writer constructs new meaning. Some of the interaction between cognition and context will be predictable and insignificant to us; some will make all the difference. *To build a theory based on those sites where interaction matters most, we must be willing to investigate real acts of writing*. I do not believe we can leap from armchair research to make assertions about the force or role of this particular dialectic without evidence of real sites where conditions and cognition meet with explosive, unacknowledged, or generative force. Nor would it be enough at this stage of knowledge to build self-referential theories of how such interaction *might work* or what such a dialectic *should lead* to.

To do justice to this partly understood, situated process, we would need to shift focus from a big "C" theoretical Context and from big "C" general theories of Cognition , to the small "c" contexts in which writing is going on and the study of strategic cognition in situ. Even though our implicit big "C" theories *affect and guide* our interpretation of lived-in contexts and records of cognition, the process of interaction is no fragile epiphenomenon; it is a robust fact of experience that can stand up to critical examination.

For me the greatest challenge would be to construct a theory of interaction that could itself support action. As an educator, the action I can foster does not go on within a social abstraction or a collective, but in the minds of individual students. The ultimate reason for my research is intervention. I need a vision that preserves the place of the thinking, acting, self-aware writer. I want a vision that can recognize the reality of that writer's bounded intentionality and socially constructed knowledge--and within the center of that vision illuminate the space for possibility, options, and action by individual writers.

The project I have outlined calls for a kind of theory-building which is not afraid of research and for a kind of research that is willing to grapple with its own limitations in order to go beyond isolated "results" to theory-building. The goal of an interactive theory, it seems to me, is intimately bound up with the problem of how to build one. In the second half of this paper, I would like to examine the role observational research might play in such theory building. There are two good reasons to do this: One is the strong premise outlined above--that we can best understand interaction by dedicated efforts to see it in action. The second and more problematic reason is that some members of the broad community of English see research itself as a threat to the humanities, especially research that uses empirical methods. Let me be concrete. Last year at the summer Rhetoric Seminar at Purdue, I talked to a young woman there, working on her degree in literature at another institution. As we were sitting around that night drinking wine, she told me that she "didn't believe in doing research." I was a little taken aback that an aspiring scholar would reject any method of inquiry out of hand, almost as an article of faith. But in talking it became apparent that her vision of empirical research was itself so reductive that she never saw beyond the methods, the

numbers, and the tables she couldn't read, to the common sense on which research and its rules of evidence are built or to goals we both cared about. My remarks here are in a sense addressed to that young woman and to our need for a broader vision of research as a tool for building contextualized and integrated theories of writing.

Research and Observation-Based Theory Building

Any theory, if it is to offer a broadly explanatory account of a significant human action or body of knowledge, will have to meet many criteria including logical consistency, clarity, scope and parsimony. A rhetorical theory which integrates cognition and context must do more. Like other "grounded theories," it must *fit* the situation being studied (that is, it can be applied without force; its categories are clearly reflected in the data) and it must *work* (that is, it must offer an explanation of the process that is meaningful to us as both theorists and educators) (Glaser). Secondly, as a theory of *interaction*, it should be built on a fine-grained, richly specified vision of the process in question.

Grand, speculative theories are well designed to capture the imagination, but they are also associated with the rhetoric of conflict among competing theories, one position striving to preempt the other in a zero/sum game. Fine-grained, observational theories can encourage the rhetoric of exploration and construction. They direct attention to the process under study and open the door to continued modification of themselves. They also allow (even invite) us to recognize significant variations in the way this theory plays itself out in different settings, from a storefront school in a barrio to a college classroom, from one writer to another.

There are many valued paths that lead to theory. Theory can be based on historical scholarship or on extrapolations from prior theories, in much the way we adapt classical rhetoric to modern problems or adapt Burke's dramatic analysis of literature to composing. Theory can also grow out of what Lauer and Asher call rhetorical inquiry: a deductive process in which the theory-builder both examines and argues for a set of premises and conclusions, a mode that can combine the strengths of a speculative leap with reasoned support. Theory can also grow out of research: a process in which one's orienting premises enter into dialogue with a set of close, systematic observations of writers at work. Observation-based theory building is carried out in rhetoric with an expanding repertoire of empirical methods, ranging from the controlled methods of experimental research to the descriptive methods of ethnography, case studies, and process tracing using cued recall and protocol analysis.

Any basis for theory-building (whether it is historical scholarship, systematic observation or personal experience) is merely a springboard, a means to an end. We must remember that theory-building is ultimately a constructive, rhetorical act: to create a structured, explanatory account of an interactive process like writing will inevitably force us beyond available evidence and into the probabilistic reasoning that is at the heart of rhetoric (Perelman and Olbrechts-Tyteca). The path we take will differ from other paths in the kind of argument and evidence it can generate. Let me quote Lauer and Asher's definition of "rhetorical inquiry" as one approach to theory building:

> Rhetorical inquiry, then, entails several acts: (1) identifying a motivating concern, (2) posing questions, (3) engaging in heuristic search [based on analogy] (which in composition studies has often occurred by probing other fields), (4) creating a new theory or hypothesis, and (5) justifying the theory (5).

The approach I am calling observation-based theory building will lead to an argument with its own distinguishing features. First, unlike an empirical study using data primarily to test or confirm a carefully delimited assertion, the goal of this process is theory. In trying to construct a more comprehensive, more explanatory account, observation-based theory building draws on research for its heuristic power as well--going a step beyond the data in an attempt to honor the data. Secondly, it differs from the process Lauer and Asher describe in that it is driven to a greater degree by the generative power of close or systematic observation. Observation is used not merely to justify or test a theory but to help pose questions, structure the search, and frame hypotheses. We can see observation-based approaches at work in emerging theories across the field: Freedman's vision of response to writing as a form of collaborative problem-solving, Dyson's developmental picture of early writing as a child's negotiation of visual, verbal, and social meanings, Bazerman's cumulative analysis of how rhetorical intentions, available schemas, and necessary conventions interact in the history of scientific discourse, Applebee and Langer's studies of writing contexts as a scaffold for learning, Bereiter and Scardamalia's models of knowledge telling and knowledge transformation, Witte's investigation of pre-text as the point at which plans, situational prompts and text structure intersect, Heath's picture of how different literate practices function, fit and misfit in different social settings, and my own attempt to explore how rhetorical situations are mediated by the goals, strategies and awareness that make up a writer's strategic knowledge. These, and other bodies of work I might have mentioned, reflect a cumulative attempt to build a theoretical picture grounded in observation.

I want to focus the rest of this paper on this particular route to theory building, not to compare it to others or even to argue for its advantages, which like any method's, are mixed. I want instead to initiate a dialogue about observation-based research by trying to describe some of its goals and limitations as I see them, as well as some of the problems of research itself. I would like to organize my comments around what I see as three features of this particular process of inquiry.

1. *Observation-based theory is built from the union of two sources of evidence: it springs in part from an intuition or an argument and in part from the complementary evidence of close, systematic observation and data.*

Let me illustrate this joint process with an example and a theoretical dilemma. The Reading-to-Write study referred to earlier left us with an important question: does the strategic knowledge we observed in this situation play a critical role in students' attempt to enter academic discourse; does it really matter for most students? Or would strategic awareness be just a luxury, useful only *after* one has learned the "basics" and the conventions or a new discourse? I could best frame my own intuitions about this strategic process as an argument from analogy. Far from being a luxury, valuable only to well-educated college students, I would argue, this strategic knowledge is closely related to the critical consciousness that provides the starting point in Paulo Freire's literacy programs. Those adults enter literacy, not by first trudging through and *banking* knowledge of the basics, but by using sounds and letters they already recognize to "make up" words that express their

own experience and goals. They become makers and users of literacy from their first evening session. As Freire and others like Ann Bertoff argue, knowing your own knowledge, whatever it is, and discovering your own power to make meaning stands at the heart of these astoundingly successful literacy programs. To that I would add , if such knowledge can catapult an unlettered Brazilian farmer into literacy, what might such self-awareness offer to a college student who stands merely on the threshold of a new form of discourse?

I like the spirit of this argument. It captures my own intuitions; it is based on a premise I know is shared by other educators; and it builds on an analogy to a clearly successful case showing the power of strategic consciousness in learning new ways to use language. And yet this argument alone is not enough. One wonders, does the analogy really *fit*? And even if it does apply at some level of generality, does it *work* as a genuinely useful explanation; will it describe the experiential reality of students learning a particular kind of discourse? An argument alone will not tell us what may in fact be happening with our students. For instance, what is the strategic repertoire your students bring to college? Does context or the background of your particular students lead to important differences in their goals or strategies that we could/should anticipate? Does the theory outlined in the Reading-to-Write study even fit the data of your experience and your students at all?

It is in response to questions like this that observation-based theory building turns to a second source of evidence, which is the data of experience. Close observation is demanding; systematic observation even more so. I think of Shirley Heath's detailed descriptions of children's speech spanning a nine year period and how, from these patterns, consistent, deep running disjunctions between the culture of home and the culture of school began to emerge. I think of Anne Dyson's systematic study of children's early writing and drawing, a study which eventually contradicted the assumption that narrative is the first and natural mode for all children, and in doing so, showed that certain children (marked as developmentally delayed by their teachers!) were in fact becoming writers by a different but equally "natural" path. I think of the Reading-to-Write data which tracked the unpredictable twists and turns of writers' minds at work; how this record captured the interplay between reading, writing, and thinking that the student's text did not register, and in doing so revealed some of the dilemmas and decisions a teacher never sees. In all of these studies and others like them, the goal is a more explanatory theory, but the starting point is the data of close observation.

We must not forget that "data" is itself a selected piece of experience--the speech the observer chose to write down, the classroom exchanges the ethnographer was there to capture, the thoughts which occupied the conscious attention of writers as they thought aloud. But compared to more ad hoc forms of personal observation and the fragile records of unprompted memory, these formal records of experience provide a large, detailed, and independent picture the observer must then account for. In being *collected* according to a broad and systematic sampling plan, the data one must be accountable to is itself less likely to be covertly patterned, pat, or biased in an unacknowledged way. Such data actively resists the observer's desire to "discover" that single example which will "prove" a pre-ordained point. Good data is assertive and intractable. In the dialogue that goes on between intuition or emerging theory on the one hand and the data on the other, these records of experience have the habit of contradicting one's cherished assumptions and pet theories. The data always contains more possibilities than we can grasp. It may even ask us to negotiate multiple representations of meaning, multiple symbol systems as when an ethnographer must translate non-verbal actions

into words or when we move from a rich intuitive perception to a coding scheme we can explain to someone else (Flower and Hayes, "Images"). This very richness is the source of a central dilemma for research. And that is my second point.

2. *Data is only data; a theory is a construction based on data.*

All data can do is provide the foundation for interpretation. And in observation-based theory building, as in much research in rhetoric, we have to take genuine leaps. We have to go beyond the data to probabilities, because our goal is not merely to describe, but to understand--to infer and to explain something we want to know. Data is the grist for an interpretive act. Moreover, theory making is never disinterested. We do research because, as a part of an educational community, we have constructed the burning questions we want to answer; we have already named the mysteries we want to plumb. We use data both to initiate and to constrain our interpretive leaps.

To say that data is only data, is also a statement about epistemology. In taking an observation-based approach to theory building one can not treat data as if it were a source of immutable, objective facts or transparent proofs, even when that data comes from personal experience. When data is used to build an interpretive theory, it can not be "read" directly without reference to the rules of evidence that constitute the discourse of research. To say that the "data shows us" something can only mean, at bottom, that our interpretation of that data has tried to live up to the evidentiary rules of research.

To understand the role of data in theory building, we should not ask "what the data means" but ask "how it is used to make meaning" within the researcher's interpretive act. I think it is clear to the readers of this journal that to do so one must reject the positivistic assumptions associated with nineteenth-century science and behaviorism. What may be less clear is that to understand the role of data we must also become more critical of the naive readings of empirical research within our own community. We need to be as sensitive to unsophisticated or reductive readings of the language of research as we are to reductive readings of literature. For instance, some readings treat the findings of a single study as an unconditional, generalizable assertion of the "research has shown . . ." variety. In this case the overextension is in the mind of a reader (who may be eager to appropriate a result). Other readings, where the aim is to critique, attribute such overextensions to the researchers themselves. Researchers are imagined to hold a variety of positivistic assumptions, to see their results as unmediated statements of natural fact. The apparent basis for this inference by readers is that research papers typically do not discuss the issue or actively deny these presumptions. Likewise, readers who are unfamiliar with the discourse conventions of research may assume that the act of mounting "evidence," especially statistical evidence, constitutes a broad claim about the validity or truth of a conclusion in some ultimate sense (cf. Knoblauch's clear statement of this issue). Or they may read a correlational claim as no different from a claim of causality. Within the conventions of research, however, the "results" of a given study, especially those which merely show a correlation, are just one more piece of evidence in a cumulative, communally constructed argument. The special virtue of a claim that has earned the name "result," is that it has been subjected to a given research community's more stringent rules of inference (Hayes).

Terms such as "evidence," "results," and "validity" are loaded concepts to a reader entering the discourse. They contribute to misunderstandings in part because their meaning must be grasped in *the context of specific research methods*. Seen in situ, they do not refer to ultimates or absolutes, but to *tools* that help build

more persuasive arguments. For instance, one could read statements about "significance" and "validity" (expected in a research paper) as if they were general assertions of value, reflecting the common usage of those terms. Whether the reader accepted this reading or assumed the researcher was intending it, the misreading would be the same. In context, these terms of art refer in fact to methods one can use to test the strength of one's evidence. For example, the notion of "construct validity" does not refer to a construct's approximation to Truth, but to the use of procedures for testing its coherence with existing theory or practice. The meaning of "validity" lies in its operational definition: it refers to a set of procedures designed to measure consensus with the rest of a discourse community (cf. Lauer and Asher) or to preclude certain rival hypotheses which other researchers could be expected to pose (Huck and Sandler) . To achieve construct validity means to pass such tests.

In trying to understand how data is in fact used in the discourse, we must also look skeptically at the practice of decontextualized or anachronistic readings of research, often conducted in the name of discovering hidden assumptions. As humanists we are well prepared to write eloquent critiques of Locke's theory of knowledge, to construct abstract or theoretical dichotomies, and to tease out the manifold implications of key words (e.g. validity, significance, data). But to understand the discourse of modern research we can not simply extrapolate from history or the OED. A sophisticated reading of research depends on understanding the context of doing research, on knowing how key terms and concepts function-as-method within the practice of the discourse. Acontextual readings, which do not see the methods behind the words, often overgeneralize about what researchers mean. Or they lead to the peculiarly ahistorical assumption that someone doing empirical analysis does so from a set of nineteenth-century, unqualified, simplistic, or positivistic premises. These premises are not only unnecessary to doing empirical observation, they have been largely long abandoned in even the hard sciences (O'Keefe). For example, compare the following two ways of talking about research:

> [Experimental, Clinical, and Formal research in composition share] the *positivist tradition's fundamental faith* in the describable *orderliness of the universe:* that is, the belief that things-in-the-world, including in this case people, operate according to determinable or "*lawful* "patterns, general tendencies, *which exist quite apart from our experience of them* (italics added). (North 137)

One wonders how many practicing researchers would agree with North's monolithic account of their premises. By contrast, when Stephen Jay Gould, who is a scientist, comments on the relation of knowledge and culture, one sees an alternative view of research in which social construction and observation both play a part. The following comments are come from an article which traced the contribution of three culturally "determined" theories of vertebrate evolution. Although Gould sees each theory as building on an historically shaped and ultimately flawed interpretative framework, his view of research allows data and interpretation to enter a constructive dialogue.

> Popular misunderstanding of science and its history centers upon the vexatious notion of scientific progress. . . . The enemy of resolution, here as nearly always, is that old devil Dichotomy. We take a subtle and interesting issue, with a real resolution embracing aspects of all basic positions, and we divide ourselves into two holy armies, each with a brightly colored cardboard mythology as its flag of struggle. . . .

> These extreme positions, or course, are embraced by very few thinkers. . . .Science is, and must be, culturally embedded; what else could the product of human passion be? Science is also progressive because it discovers and masters more and more (yet ever so little in toto) of a complex external reality. . . . Science is not a linear march to truth but a tortuous road with blind alleys and a rubbernecking delay every mile or two. Our road map is not objective reality but the patterns of human thought and theories. . . .
>
> But this history [of three views on the development of vertebrates] is not only a tale of social fashion. . . . Each world view was a cultural product, but evolution is true and separate creation is not (16-24).

Gould takes a strong stance on the interaction of data and ideology--a stance which I think marks observation-based theory building as well. Although empirical methods grew up in the context of logical positivism and 18th and 19th century science, the most rigorous sort of empiricism can be carried out with very different assumptions about what those "results" might mean. Ironically, the process which practicing researchers actually argue about is both more interesting and more problematic than these "cardboard mythololgies" are.

In practice, research is a process of case building in which data is a privileged form of evidence. Because the conclusions to which we aspire in the humanities and social sciences are not susceptible to logical demonstration or proof, we depend on argument and justification. We are operating in what Perelman and others have describe as the province of rhetoric--the truths we arrive at are judgments about what is probable. And, as Toulmin has argued, our judgment about what is probable is intimately related to our purpose in doing research or in making a deliberation. Imagine two groups of researchers wanting to understand the place of Black English in education. Linguists intent on recognizing/justifying linguistic diversity are likely to draw on different methods of analysis and justification---and to reach different conclusions about the phenomenon--than would educators focused on the effect Black English has on social and economic equality (Donmoyer).

Given that discoveries are contingent on the goals of investigation, the critical question becomes: what constitutes a good argument (Phillips)? This question comes up repeatedly in the exciting debate over quantitative versus qualitative inquiry that has raged for the past seven years in the pages of *Educational Researcher*, the journal of the large American Educational Research Association. This research community lives in a post-positivistic world which acknowledges both the relative nature of knowledge and the social and cognitive process of interpretation in educational research (Garrison, Howe, Phillips). The problem is how to evaluate the validity, reliability, and meaningfulness of claims made *within* this world (Fetterman, Firestone, Mathison, Peshkin). In this debate research methods operate as rhetorical methods in Perelman's sense--they are ways to evaluate the evidence for an idea. For example, researchers use the technique of "significance testing," not to certify Truth or Significance, but to build a case for themselves and others about the relative strength of their evidence, about the likelihood (probability) that the pattern they saw could be seen by others, or that it might appear again, or elsewhere. However, an even more important way to build a case within the research community is to make one's own process of interpretation--one's methodolgy--transparent. Miles and Huberman describe this

process with exceptional clarity as they talk about the problem of consensus building in qualitative research:

> It seems that we are in a double bind: The status of conclusions from qualitative studies is uncertain because researchers don't report on their methodology, and researchers don't report on their methodology because there are not established conventions for doing that. Yet the studies are conducted, and researchers do fill up hundreds of pages of field notes, then somehow aggregate, partition, reduce, analyze, and interpret those data. In publishing the results, they must assume theirs is not a solipsistic vision. . . . [They] do have a set of assumptions, criteria, decision rules, and operations for working with data to decide when a given finding is established and meaningful. The problem is that these crucial underpinnings of analysis remain mostly implicit, explained only allusively. . . . We need to make explicit the procedures and thought processes that qualitative researchers actually use in their work. (22)

To say that data is only data, then, is to assert that research is a process of case building and justification to one's self and others. Consider the problem which motivates this article: trying to understand the interaction of cognition and context in writing. The goal of an observation-based theory would be to create a finely-grained explanatory theory, to construct a more fully-specified vision of this process, based on the data of experience. But because we can not *finally know* if the patterns we see are there, the methods of observational research should be read as *attempts* to test and verify one's claims, as *attempts* to create more precise operational definitions, and/or as *attempts* to rest claims upon multiple, independent observations based on multiple methods (Cf.Schriver). In this process, empirical observation plays a central and positive role. However, this method of inquiry is not without unavoidable difficulties of its own. In the rest of this paper I want to concentrate on some of the inherent problems of observation and on the limits of evidence from any source. A theory based on observation, like any argument, is still nothing more than a probabilistic statement. The problem is how to respond to the necessary uncertainty of our own interpretations.

My mind goes back to that young woman working on her literary dissertation, developing her own new reading of a text. It was the *spectre of empirical methods* that made her reject research. Why on earth should Anne Dyson do a detailed, even quantifiable, analysis of her six-year olds? Why should theorists do more than assert, describe, and present persuasive examples of the evocative patterns they see? One answer is that *as theorists and researchers, we inevitably, constantly, and energetically impose meaning and pattern on the data of experience.* We begin a study, we leap to an argument, and yet all too often, when we return to that larger world of our data, when we analyze it more, asking if it fits our hypothesis, we see we were "wrong." Our interpretive act created a lovely, theoretically appealing, logically consistent pattern. It would have made a great journal article. But as a theory aspiring to explanatory breadth it was wrong. Our theory may, for instance, have described the striking performance of Jeannelle and Jason to a "T," but on closer analysis it violated the experience of every other student in the study.

There is a double bind in this profession. We know as a theorists, that our interpretative acts can not be "right" in any final sense. But unfortunately, they can be wrong in some important ways--they can fail to fit or account for the experience at hand; they can fail to do justice to the data, to the process, or to the people we are trying to understand. The process of rhetorical inquiry Lauer and Asher described

has always been alive to this problem, insisting on the tests of internal coherence and consistency. And, in fact, many tentative perceptions are discarded by those means long before we turn to other, more elaborate filters. But the complexity and data-rich detail that both cognitive and contextual studies generate can create additional problems.

3. *Observation-based theory turns to empirical methods because it is sensitive to its own limitations.*

Given enough time, people, including teachers, researchers, and literary critics, will always perceive patterns, of some sort, in anything. In the face of this human tendency, observational research relies on two acts of common sense. The first is to subject these observations and interpretations to the test of reliability. As my colleague John Hayes once said, looking at protocols is little like looking at clouds--if you look long enough you can always see a pattern. The question is, would anyone else see it too ?. Does this pattern in the data exist only in the eye of the beholder or the mind of the theorist ? A formal test of reliability among different observers is a response to this dilemma.

In practice this simply means that the researcher must articulate the pattern he or she perceives into a coding scheme that tells another observer how to read the data (e.g., how to recognize a goal, an act of resistance, or a commonplace of academic discourse when one of these postulated events appears in the data). By convention, researchers expect at least 80% agreement as a basis for asserting reliability.

Sometimes reliability is simply checked at the end of a study and the agreement score reported as another piece of evidence. However, this process of developing a shareable reading of the data can be even more valuable when it is used in the early stages of analysis to create a more sensitive and fine-grained theory. In this process the researcher asks a co-coder to analyze a sample of the data using the tentative theoretical statement (expressed as a coding scheme) that the researcher has developed from his or her own close analysis. The (inevitable) points of disagreement between coder and co-coder become sparks to insight as they challenge a researcher to articulate intuitions, recognize disconfirming evidence, and see the diversity of meaning his or her own categories may embrace. Reliability comparisons, used as a generative technique, can lead to substantial changes in interpretation as a researcher progressively reshapes his or her claims to better reflect the data. What began as a method of confirmations becomes a step in an epistemic process. The exuberance of our pattern-making powers, fueled by an initial piece of evidence, is only problematic, then, if we disregard conflicting messages from the data itself. The test of reliability is one way these "messages" are spoken.

Observational theory building tries to deal with its own limitations at a second critical point, by turning to another method that systematizes common sense. It sends the theorist to the resistant, uncompressed body of the data as a whole, with *the injunction to listen to that data--to construct meaning-- in a systematic way*. The metaphor of "listening" to the data is used in research not because people literally assume data can speak for itself without our constructive effort, but to dramatize the need to avoid selective observation and the willful imposition of one's own assumptions. The art of listening to the whole involves not only an openness to contradictory and disconfirming evidence, but a perverse zest for rival hypotheses, and an active search for unpredicted patterns that might be more fully supported by the data than those predicted. Imagine, for example, that you are at a critical point in theory building. You have discovered a meaningful pattern:

- You have found some striking examples of students creating--and then dismissing--their own personal elaborations as they read and write

- Or you have just done a brilliant explication of a protocol or a student text, or completed a revealing case study

- Or you have noticed that your advanced writers seem willing/ able to establish their personal authority early in a text, in ways your basic writers fail to do . . .

You have the beginnings of a theoretical statement about some of the cognitive/contextual dynamics of authority.

As a meaning maker, you have imposed a new order on the data of experience. And the question you must now answer for yourself is, is this new order an interesting but isolated pattern? Would this local explanation account for the other texts in the folder, would it fit the other protocols, would it describe what those 40 students actually do and how the two classes really differ? *In essence, does your pattern fit the data at hand?*

No theory will be a complete or perfect fit. Indeed, the object of theory building as opposed to case studies is to isolate certain critical features from the "noise" that constitutes the rest of the experience. And we must remember that we are constructing meaning based on our own definitions of meaningful. Given those premises, there are still some hard questions we want to ask about the fit of our interpretations.

One of the first common sense methods of empirical research is to test the fit by asking, is there a rival hypothesis that offers a better explanation? Many theories of discourse will seem true at some level of generality--e.g, advanced students of anything have more authority than beginners. However, rival interpretations that challenge the "authority" hypothesis might include these: Does my operational definition of "personal authority" really capture a writer's personal attitude or can I only claim to have seen certain textual conventions (such as the use of "I") that seem "authoritative"? Or perhaps the assignment is really producing this effect: maybe the advanced writers are working on a familiar genre for which they know the conventions for asserting and supporting a claim--regardless of their personal investment or confidence? Or perhaps the real variable here is topic knowledge: the advanced writers are doing research papers which immerse them in rich bodies of information and evidence--their authority is logos; the basic writers, however, were assigned an expressive/descriptive paper which leaves them swimming against the current, forced to use the subtle conventions for establishing ethos and personal authority in an artful genre. Experimental research methodology has formalized some of the most common sources of rival hypotheses into a set of standard threats to validity (cf. Huck and Sandler). Before making a claim about causality, researchers should be able to eliminate rival hypotheses, such as the effect of "mortality" in which only the students who liked the class or shared the observer's bias remained in the sample at the time of evaluation. Perhaps the most devastating rival hypothesis to an experimental study is that what appears to be causation is only correlation. For example, imagine that children's writing ability was shown to increase with cultural literacy, with shoe size, or with some other variable. One might claim causality, but in fact all of these supposed causes may simply reflect the critical variable of age.

In experimental research one tries to control for outside influences in order to exclude such rival claims in advance. In the more exploratory enterprise of observation-based theory building, it is difficult to deal with rival hypotheses through control. However, this concern still enters the process as an effort to capture observations that escape the mold--to actively explore alternative interpretations of the data. There is a well documented tendency in studies of reasoning and inference-making for people to look only for positive instances which confirm a hypothesis and to happily ignore counter evidence (Wason & Johnson-Laird). Data-based observation encourages an expectant stance toward new data that can leave the theorist open to revision. But more than that, by asking the researcher to make a theory operational--explicit enough to be reliably used by another observer--it allows the data to speak back on its own resistant terms and may encourage rival, complementary, or more explanatory patterns to emerge.

At times, research methodology allows us asks how well a theory *fits* and how well it *works* in yet another way by asking if the pattern or frequency of our observation is strong enough to be surprising: have we uncovered a broadly descriptive pattern or only another interesting but idiosyncratic event (Hayes)? For instance, the particular ways of negotiating or avoiding authority that we observed in a few of our basic writers may, on a more careful look at the data as a whole, be a phenomenon that is in fact normally distributed across all sorts of students, maybe even across all sorts of adult writers. Developing a voice, taking a rhetorical stance may be a problem we all share. If that were the case, our theory asserting that the texts of basic writers can be distinguished by the absence of personal authority and/or our educational innovation based on the differences we thought we observed would be resting on a very shaky premise. Although we might be able to build a convincing argument about a general relationship between personal authority and writing, when it comes to grounding our theory in the data of experience and testing its explanatory power, the data in observation-based theory building has a chance to reply and tell us that we have not yet captured the "truth" of this experience. Our theory does not yet *fit* or *work* for the situation we hoped to explain.

Here is one place where an estimate of probability, in the form of elementary statistics, can play a useful role in exploratory research. Assume that we have observed a number of cases in which basic writers fit our imagined pattern and fewer cases of advanced writers who do so; or assume we see in our protocol data a growing number of elaborations made during reading and discarded during writing. Is this pattern a meaningful description of the fate of elaborations? Does our pattern of authority-taking actually distinguish one group of students from another? A simple test for statistical significance lets us compare the frequency or distribution of the events we see, with what might occur by chance, at random in a normal population of students or in a data set the size of ours. If our pattern is much more frequent than chance would dictate, it begins to look surprising and the probability that we have found a meaningful category goes up. The conventions for claiming statistical significance are rigorous: for a pattern to appear surprising is must have the probability of appearing by chance less than 5 times in 100 or in some cases less than 1 time in 100, a result that is expressed as a probability (p) that is equal to or less than a given level of occurrence (e.g., $p=.05$ or $p< .05$). Notice too what "significance" means here; it is a conservative and probabilistic statement which only asserts that the pattern we claim to have seen is unlikely to have occurred by chance. Under some circumstances we might choose a statistical tool that is less rigorous than a "significance test" and more sensitive to partial or weak but interesting patterns (Glaser)--i.e., we could choose to be a little more easily impressed.

The point of all this is not to prove a claim but to understand more about the strength and predictive power of the patterns we have created. Statistics, by their very nature as tests of probability, are not designed to prove that a point is true; rather,that it isn't probable. Once we decide to move beyond a single case study and talk about the pattern of the whole, when multiple and complex patterns are interwoven throughout a text or throughout the performance of readers or writers, it is often impossible to grasp the patterns of frequency or distribution without turning to a test of probability or a statistical test of correlation. Simple counts and even averages are often deceptive. More importantly, statistical tests are often the to only way to acknowledge the negative evidence and the counter examples in our data in a rigorous and systematic way. They allow us to fit our theorized pattern, like a imaginary transparency laid over the data as a whole, and to see where the pictures match--and where they don't.

To return to that young woman again, what I hope she came to see in our conversation was that the attempt to *systematically test the fit* between your vision and your data is not an attempt to eliminate recognition of variety but actively to attend to it. Nor is it an attempt to certify validity, to assert you have found truth, or to replace the richness of experience with numbers. In a way it is just the opposite--it is a way to listen to more of that experience. It is also a response to the limitations of our own ways of knowing and to our extraordinary ability to see pattern in anything. It is a response to our theory-guided tendency to seek out what we can currently imagine and to see what we already believe. All methods are ultimately *weak* methods, just as all our theories are only partial. In observation-based theory building these two attempts to test claims--that is, to test for reliability and for a fit to the data with or without statistics--are often powerful not because they are an instrument of proof, but because they are a hedge against our own fallibility. But more than that, these instruments of caution can also be turned into generative tools for building more finely grained theories that are more likely to work and fit.

Let me conclude with a final issue we face in building observation-based rhetorical theories that can integrate rather than polarize cognition and context. My own work offers an example of the problem. The Reading-to-Write study used a rich body of data to build a tentative *theory* of strategic knowledge and its role in learning to manage academic discourse. This theory emerged from a value-laden interpretative framework concerned with how individual students can take authority over their own writing by gaining awareness of their own interpretive process. At the same time, I believe this theory is a sensible and careful description of the students we observed. And its focus on goals, strategies, and awareness offers at least one way to describe how cognition and context work together as reader/writers construct meaning. But will my description of how cognition and context interact fit the data of your students? Will my more general argument for the role of strategic consciousness itself hold when we examine other contexts? I can't say. A genuine observation-based theory of strategic knowledge in writing, if we as a field develop one, will not be the product of any one study or any one writer or theorist. Observation-based theory building is a cumulative effort. It is shaped by a community of observers working from different points of view, with different methods, and in different contexts of observation. More importantly such a theory will be shaped by the tension between its own two goals, which are to create, on the one hand, a meaningful *interpretation* of the world and, on the other, to *test that constructed reality* in clear and careful ways, against the rich and contrary data of experience.

NOTES

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